

Meeting Summary

RURAL LEVEE REPAIR CRITERIA WORK GROUP MEETING #5

SEPTEMBER 26, 2013

California Department of Water Resources, JOC Room 130

3310 El Camino Ave. Sacramento, CA

Contents

Summary of Action Items	1
DWR Welcome and Opening Comments.....	2
General Work Group Comments	2
Section 1. Introduction	3
Section 2. Rural Levee Repair Criteria, General Guidelines	4
Section 3. Rural Levee Repair Criteria, Standard Templates	6
Next Steps	9
Attendance.....	10

Summary of Action Items

1. Center for Collaborative Policy will send notes of today's meeting. (Due: Oct 4th)
2. DWR will update work group members on next steps for wider review and revision of the RLRC document. (Due: Oct. 4th)
3. DWR will provide members with revised draft RLRC document for review prior to the next work group meeting. (Due: Nov. 7th)
4. Next work group meeting is scheduled for Wednesday, November 13th 1:00pm-4:30pm.

DWR Welcome and Opening Comments

Meeting Facilitator Adam Sutkus (Center for Collaborative Policy) welcomed members and interested parties to the meeting and led introductions around the room.

Dave Wheeldon (RLRC Program Manager, DWR) thanked everyone for attending the work group meeting. DWR has prepared a draft RLRC document; although the report has all the sections, there are remaining gaps. The purpose of today's meeting is to review the sections of the document and identify any missing components. The focus should be on overall content rather than detailed wording of the document. The meeting discussion will focus on sections 1, 2, and 3, including the templates. DWR has received helpful comments from several members and specifically worked with the USACE to address their comments and suggestions. Mr. Wheeldon thanked Mary Perlea and Ryan Larson from the USACE for their input.

Mr. Wheeldon asked the work group to consider, in their review, the overarching intent and purpose of the document. The use of the word 'criteria' may be misleading; despite of the efforts in preparation of the work group charter and repeated communications, some individuals outside of our work group may still have misperception about the intended scope and purposes of this Rural Levee Repair Criteria. Mr. Wheeldon asked members for input on the use of the words 'criteria' vs. 'guidance' for the document name in efforts to accurately represent the purpose of the process and the document.

General Work Group Comments

Mr. Sutkus asked the work group for general observations and comments regarding the process thus far. The following comments were offered:

- A member asked for clarification on the target audience for this document. Mr. Wheeldon replied that the RLRC is geared towards local maintaining agencies (LMAs) and their consultants, planning groups, and also for DWR use when performing maintenance tasks.
- A member suggested that in order to achieve the intended purpose, the reference to the USACE 408 permit should be better placed, as some rural levees are not federal levees and subject to different standards. This includes many Delta levees.
- Adding to the previous point, a member suggested additional attention on the slope requirement depicted in the template. The focus of the document is to provide information on how to repair degrading levees and bring them up to functional levels rather than to formal design standards. Therefore, the templates should specify 'match existing slope', instead of 3 to 1.

Mr. Wheeldon shared that earlier this week, during the Central Valley Flood Protection Board (Board) Coordinating Committee meeting, Ric Reinhardt (work group member) updated the Board on the RLRC process. Mr. Reinhardt added that the Board is interested in the document and requested a presentation on the RLRC by the end of the year.

Section 1. Introduction

Mr. Wheeldon stated the importance of consistent terminology use in the document and asked the work group for input. Specifically, the use of rock soil protection vs. rip-rap needs to be discussed and conform to industry standards.

The review of the RLRC document is guided by members' comments and highlighted areas in the draft document. The preface and introduction sections of the document provide basic background information on the RLRC, including the relationship of the RLRC to the Central Valley Flood Protection Plan.

Members discussed different potential titles for the document:

- A member proposed amending the title to Rural Levee Repair *Guidelines*.
- A member suggested revising the title to non-urban levee repair guidelines but other members suggested that it is not appropriate due to State's strategy outlined in the CVFPP for urban and urbanizing areas small communities, and rural-agricultural areas. RLRC is for rural-agricultural areas.
- A member suggested including a discussion on the applicability of the document to rural levees of different ownerships (federal, state, local, etc.) in the Introduction section.

A member suggested that the reference to 'requirement' be avoided throughout the document to align with the intent of the document. A member questioned the last sentence in Section 1.2, Page 1-3 that reads: "The level of efforts and requirements stipulated in the criteria balance the consideration of existing standards for levee repairs, and the ability of local maintaining agencies in rural-agricultural areas to implement the repairs." The work group discussed this statement. Mr. Wheeldon clarified the intention to capture the financial constraints of the LMAs. It was suggested that it is important to emphasize that the rural levee repair target is to match existing nearby levee conditions, but not to restore to any specific standards. It was suggested that two considerations be added: potential resources and repair based on nearby conditions.

Mr. Wheeldon reviewed the document structure and reminded members to review Appendix B to ensure that their name and affiliation is represented correctly.

Section 2. Rural Levee Repair Criteria, General Guidelines

Section 2.1 Environmental Stewardship

Mr. Wheeldon stated that section 2 of the document would benefit from a DWR FESSRO and RLRC work group NGO review with attention to Section 2.1 in particular.

Section 2.2 Use for Minor Repairs

Mr. Wheeldon asked the work group if a section on minor repairs is needed. Members agreed that this section is not necessary because it suggests common sense.

Members discussed the use of the terms 'major' and 'minor' along with the noun, repairs. Members suggested avoiding this characterization in the document; the members also discussed the use of the descriptor, 'significant', and concluded this may be appropriate. However, the group agreed that it is appropriate to use the descriptors, major and minor, along with erosion.

Section 2.3 Customization Based on Local Conditions

Mr. Wheeldon reminded the work group that there is a special consideration section and asked members to help identify areas that should be part of this section. Section 2-3 reminds the readers that the template is only the basis for local customization. Members agreed the reminder is sufficient.

Section 2.4 Use of Assessment Water Surface Elevation

Mr. Wheeldon asked the work group about the use of assessment water surface elevation in the discussion of repair and in the templates. Mr. Rich Millet (URS) will provide DWR a definition for this term; it would be added to the next version of the document. A member clarified that repairs are not intended for a specified level of safety or design and therefore the member suggested avoiding the use of this term, but recognized the intention to avoid using the design water surface elevation, which is inappropriate herein. A note was added to the templates to clarify their use as repair and not design.

A member added that with lack of engineering information, LMAs may use their judgment to determine water surface elevation.

Section 2.5 Application of Existing Law and Regulations

Mr. Wheeldon explained that this section is a reminder to readers to abide by applicable regulations and laws.

Members suggested the consistent treatment toward the use of descriptors, major and minor. Some suggested additional details and characterization; however, most agreed that everything needed is already said in the current texts and suggested that we do not get into details that are specific for certain levees, or statements on specific (federal and state) law and regulations.

Section 2.6 Special Considerations

Mr. Wheeldon asked members to help identify areas that should be part of the special consideration section. Alternatively, would member advise against a special consideration section?

Section 2.6.1 Sacramento-San Joaquin delta levees: Mr. Wheeldon explained that this section is intended to capture the uniqueness of the delta levees. Additional review by DWR FESSRO is required.

Members suggested that replacing the word 'most' with 'some' in the last sentence of the first paragraph to be more acceptable by the Delta interests. Mr. Porbaha offered to provide reference materials for this section.

Section 2.6.2 (animal damage repair) and section 2.6.3 (existing levee vegetation): Mr. Wheeldon asked members if these sections need to be included and to what level of detail.

Mr. Wheeldon asked members if pictures should be included in the document to highlight potential problems. Since problems are presented in the field differently, members agreed that it would not be helpful to have pictures in the document.

Members suggested the following:

- Relate animal damage to specific repairs such as erosion and slope stability.
- Avoid the word 'repair' and refer to the section as 'animal damage'.
- Include a discussion on existing levee vegetation information in the environmental stewardship section upfront and remove section 2.6.3. Some further suggested that the existing environmental stewardship section is sufficient.

Section 2.6.4 Multiple repairs to one levee system: Mr. Wheeldon asked if this section is needed. Members suggested that the section be removed since it is a common sense practice.

Section 2.6.5 Others: Mr. Wheeldon asked if the special consideration section is needed since there are only two items (Delta levees and animal damage).

A member suggested that a section be added up front to explain the use of this document broadly as applicable to all types of rural levees. This section should recognize that there are different levee ownerships. The intention of the criteria is to be used for different types of levee to the extent possible while recognizing that because of ownership, other considerations may need to be addressed.

A member asked about the need to add a section on bypass levees since a different freeboard may be required. Bypass levees are federal and are regulated. It was suggested that a caveat be added that bypass levees are excluded because of design requirements. It was also suggested that language be added upfront to explain that bypass levees by default have the function of protecting broader area and therefore it may not be sufficient to narrowly look at adjacent condition when applying repair options.

Section 3. Rural Levee Repair Criteria, Standard Templates

In reviewing the templates, Mr. Wheeldon asked the work group to identify repetitive themes that may want to be addressed upfront in one section. It was suggested that implementation guidance section may be presented up front. A member suggested combining the stability and through seepage berm templates since they are similar. It was noted that although the construction is the same the two provide repair for different distress conditions.

Section 3.1 Erosion

Suggestions:

- Include landside slope erosion due to overtopping.
- Add landside slope erosion as a bullet item but not include in the template.
- Take out the word 'detrimental' from bullet item referencing hydraulic anomalies.
- Revise the last paragraph to include 'restoring levee to its original design'.

Section 3.1.1 Rock slope protection for major erosion: Mr. Wheeldon asked for clarification of the use of rock slop protection (RSP) vs. rip rap. RSP is a general term for covering slope and may include rip rap, river rock, or any other covering. Another term that may be used is the generic term revetment. A member suggested to not specify rip rap gradation but recognized that it is important to avoid large size rocks due to potential erosion of the embankment levees.

Suggestions:

- In the applicability section, call out slope as 3:1 or as typical in local conditions.
- Use the term 'slope protection' in reference to anything that is covering the slope and use the term 'rip rap' for specific designed rock.
- Add a definition to rip rap and rock slop protection in the appendix.

Figure 3-1 suggestions:

- Revise the width and call it 'match existing' instead of specifying the width.
- Simplify the drawing.
- For consistency, use the term 'crown'.

3.1.2 RSP for minor erosion: The work group agreed that the minor reference is appropriate for this section. The applicability paragraph will be revised to address previous comments.

Work group discussion focused on benching and notching of eroded slopes prior to refill. A clarification was made by the USACE that notching is appropriate for cohesive materials (clay) whereas silt and sand material can be simply cut. It was stated that it is important to reestablish the slope prior to filling in to avoid worsening the erosion conditions.

A member stated that notching is too expensive. A member added that technically it is difficult to notch with equipment on steep slopes. Some erosion repairs for delta levee include straightening the slope and then filling in with rock. RSP serves as a cover layer and is not intended to recreate the levee.

Mr. Wheeldon stated that Templates E-1 and E-3 were revised based on previous work group discussion.

Suggestions:

- Clarify that requirement for reconstructing the slope is dependent on the type of soil.

3.1.3 Widened levee repair for erosion: The work group discussed the highlighted 1st bullet item in major activities and the need to establish a water surface level.

Suggestions:

- Modify the paragraph: *The new water side slope is established by starting at the inverted and coming on the design slope. The new slope is outside of the erosion.*
- The accompanying template E-3 should show the scour going farther so it is more vertical.
- Show a more prismatic triangular shape (wider at the bottom) on template E-3.
- Draw the water side bank as more vertical, dropping off on template Figure E-3.
- Change Template E-1 to E-3 in 1st sentence of major activities section.
- Remove the permit reference on page 3-6.

Section 3.2 Underseepage

The work group discussion focused on Figure 3-2 and accompanying text.

Suggestions:

- Safety factor of 1.6 is not needed.
- Revise the text to state: USACE guidance for allowable grading is x. The purpose of this repair guidance is to allow flexibility based on other considerations.
- Provide visual guidance rather than references to analyses to help identify repair options for underseepage.
- Highlighted text accompanying Figure 3-2 (before and after) should be taken out.
- Change the phreatic line to slope more in Figure 3-2.

Section 3.2.1 Drained seepage berm: Work group discussion focused on filter thickness. The main concern with the filter layer thickness is the potential for over compacting layers. Another comment focused on the filter compatibility requirement in the implementation guidance (4th bullet). It was suggested that standard material may be applied and that filter compatibility is contingent on the material used. The detail provided in the document should be generic enough to account for a range of existing conditions.

Suggestions:

- Change 12-inches filter layer to 6-inches.
- State that filter layer thickness should be based on typical practice and avoid specific requirements.
- Leave the bullet item as filter compatibility and remove the analysis requirement.

Section 3.2.2 Undrained seepage berm: Suggestions from previous discussion will be applied to this section, including the compaction requirement and filter compatibility.

Suggestions:

- General bullet items under the implementation guidance section may not be necessary if the section is provided up front.
- Specific implementation guidance bullets should be condensed and be included for each template narrative.

Section 3.2.3 Ditch or canal fill: Work group discussion focused on the differences between landside and irrigation ditches which may be beyond the scope of this section because they require engineering design.

Suggestions:

- Discuss canal as a special consideration.
- Avoid the term ditch or canal. Use the term ditch or depression fill.
- Revisions were suggested for accompanying template US-3 to improve the representation of the seepage: add an arrow for water flow direction, delete the word aquifer and the word foundation blanket, make the sketch a generic levee section, move ditch closer to the levee.

Section 3.3 Through Seepage

Refer to previous suggestions as apply to this section. Mr. Wheeldon asked if Figure 3-2 should be removed. Members responded that the figure is helpful.

Section 3.3.1 Drained toe berm: Work group discussion focused on accompanying figure TS-1.

Suggestions:

- Slope should be designated as 2:1 max instead of X:1 for berm fill.
- Call out Slope but remove the term (original).

Section 3.3.2 Undrained toe berm: No external comments were offered to this section.

Suggestion:

- Clarify the 1st bullet in the implementation guidance section.

Section 3.4 Landside Slope Stability

Mr. Wheeldon asked for comments on Figure 3-2. The work group discussed the differences in consideration for stability and through seepage berms (height and width). A member suggested that the focus should be on symptoms and that the template should reflect observed conditions in the field to help LMAs select the appropriate repair alternative.

Suggestions:

- Keep the two repair options separate and explain the differences in the applicability section.
- USACE will suggest height of berm definition.

Section 3.4.2 Undrained stability berm:

Suggestions:

- A member suggested that all stability berms be avoided.
- Comments for drained stability berm apply to the undrained stability berm.

Section 3.4.3 Partial levee replacement: Work group discussion focused on the accompanying template SS-3.

Suggestions:

- The failure profile in Template SS-3 does not properly capture the failure.
- Template SS-3 needs to be clarified, the debris appears as a slump.
- Remove slide debris from Template SS-3 and refer to it as soil.

Section 3.5 Underseepage and Through Seepage/Slope Stability

This section is introductory and does not provide specific repair description.

Suggestions:

- Implementation guidance language should be consistent throughout the document.
- When applicable, discuss symptoms to help clarify the applicability discussion and to identify the appropriate template (COM-1 or COM-2).
- Add symptoms column to the templates index for ease of use.

3.6 Crown Depression

No comments were provided for this section.

Next Steps

The next meeting is scheduled for Wednesday, November 13th from 1:00pm to 4:30pm.

A member inquired about wider distribution and review of the RLRC document, including farm bureaus and the Flood Control Association. The member suggested that a wide public review will address Emma Suarez' (a Board member) concern regarding the involvement of the agricultural community in this process. Mr. Wheeldon will discuss dates internally to DWR and inform the work group of next steps and timelines for reviewing and revising the RLRC document.

Attendance

Name	Affiliation
Work Group Members	
Albertson, Gary	PMA Sacramento
Bair, Lewis	RD 108
Cosio, Gilbert	MBK Engineers
Countryman, Joe	CVFPB, Board member
Hill, Reggie	Lower San Joaquin Levee District
Labrie, Gilbert	DCC Engineering
Larson, Ryan	USACE
Perlea, Mary	USACE
Porbaha, Ali	CVFPB
Reinhardt, Ric	MBK Engineering
Stadler, Steven	Kings River Conservation District
Storesund, Rune	Storesund Consulting
Tillis, Kevin R. (by phone)	Hultren-Tillis Engineers
Interested Parties	
Phillips, Lisa	CSU Sacramento
DWR ULOP Team	
Wheeldon, Dave	DWR-FMO
Ara, Syada	DWR-FMO
Sun, Yung-Hsin	MWH Americas, Inc.
Chowdhry, Khaled	URS
Sutkus, Adam	CCP
Kalman, Orit	CCP